IN THE SPECIFICATION

On page 1, at line 2, under the title insert as a paragraph:

The present application is a continuation of U.S. Serial No. 10/062,866 filed January 30, 2002 now U.S. Patent No. _____.

On page 1, line 7, insert as a heading:

BACKGROUND

On page 5, before line 1, insert as a heading:

SUMMARY OF THE INVENTION

On page 12, please replace the paragraph beginning at lien 29 and continuing on page 13 with the following paragraph:

The loop filter 20 is an RC network and it incorporates a large capacitor which dominates the dynamic response of the control loop. A small resistor is put in series with this capacitor and connected to the VCO input 102. This resistor ~~allows the control loop to overpower a small amount of circuit noise and thus stabilize the phase relationship between the VCO and reference signals~~prevents the loop from becoming unstable by reducing the phase shift from the capacitor.

Please replace the paragraph on page 13, beginning at line 29, with the following paragraph:

A sensitive phase comparator, such as for example, a D type flip-flop 30 is connected to the reference oscillator 32 and the frequency divided VCO signal where the reference is connected to the ~~data~~ clock input and the VCO is connected to the ~~clock~~ data input.

Please replace the paragraph on page 16, beginning at line 17, with the following paragraph:

Nevertheless, in application environments spurious RF may occur which is sufficiently intense and at sufficient frequencies so as to ~~false~~ falsely trigger the sensor. In view of this, in the preferred embodiment filters 103 and 104 are connected between the sense electrodes and the VCO 22.

On page 17, add after the last line:

Where:

Φ_{en}= the normalized phase error

C_v= the capacitance formed by the capacitor C1 on the circuit diagram depicted in figure 2, in conjunction with the capacitance of the sense electrodes and capacitance to the shield (if present) and stray board capacitance.

T_{delay}= the time delay corresponding to the phase delay due to element 34.

ω_n= the natural response frequency of the circuit and is given by:

On page 18, replace the formula appearing on line 24 with the following formula:

$$K_0 = F(Vcc, R1, R2, C)$$

On page 18 delete lines 32-33.

On page 19, please replace the paragraph beginning on line 1 with the following paragraph:

> R_1 = resistance value corresponding on the circuit diagram depicted in figure 2 ~~to R1~~ and
>
> R_2 = resistance value corresponding on the circuit diagram depicted in figure 2 ~~to R2~~
>
> and where the precise functional relationship required for circuit design purposes, denoted ~~by f~~by F in the above equation, may be determined from the detailed data presented in vendor data sheets which, for example, is variously presented graphically in "CD54/74HC4046A Texas Instruments Data Sheet, Feb. 1998, revised May 2000.", which describes operation of the particular PLL circuit element depicted in figure 2.
>
> ~~VCO = the middle of the range of the control voltage 102, i.e. Vcc/2 where Vcc is the supply voltage and is equal to 3.3V in the circuit depicted in figure 2)~~

~~Vref = Reference voltage which is internal to the PLL chip.~~

On page 20 replace the paragraph beginning on line 21 and continuing to page 21 with the following paragraph:

Figure 3 depicts a block diagram of the sensor electronics 40 in accordance with an alternative embodiment of the present invention, and includes common reference numbers depicting identical or subsequently similar elements described in connection with embodiment 10 shown in Figure 1. In this embodiment 40, the trigger is based on a voltage comparator 42. This is an alternate method of detection and uses the control circuit of the phase locked loop (PLL) 12. The operation is as follows: As with embodiment 10 shown in figure 1, the average control voltage is the voltage required to cause the VCO 22 to operate at the same frequency, after division, as the reference oscillator 32. In this embodiment however there is no phase delay network and instead phase shift errors will cause the phase/frequency comparator 24 to increase or decrease the control voltage 102 until the phase difference is corrected to zero. In this arrangement 40 the phase error signal from the phase/frequency comparator 24 is filtered by a first loop filter which may comprise an RC network 44 and is also filtered by a second filter which may also comprise an RC network 105 and which has a much longer time constant than the first RC network and which provides a voltage reference to the comparator 42. When the control voltage 102 reaches a ~~preset~~, positive going voltage threshold at the comparator 42, due to detection of a moving object within the activation region of the sense

electrodes 14 and 16, the comparator 42 actuates and provides the sensor output trigger signal.

Please replace the paragraph on page 21 beginning at line 21 with the following paragraph:

The operating frequency of the sensor for a soap dispenser (not shown) is the VCO frequency and is approximately 0.5 ~~MHz,~~MHz (the actual frequency is 16 times the reference oscillator frequency of 32.768kHz which equals 0.5244 MHz). This frequency is set to be sufficiently high such that a person's hand is always detected by the sensor as a dielectric material as opposed to a conductor sometimes and a dielectric at others which could give rise to variability in activation range and general performance. The issue arises due to the fact that an individual operating the dispenser may or may not be electrically grounded. For instance the operator while requesting soap may at times have one hand in contact with a grounded metal object such as a sink or faucet or be connected to ground electrically by a stream of running water.

Please replace the paragraph on page 23, beginning at line 1 with the following paragraph:

Figure 4 illustrates a simulated soap dispenser base 50 having the electrodes 14, 16, formed from copper foil, disposed in a spaced apart relationship for enabling the establishment of an electric field therebetween. The side by side arrangement gives rise to an electric field between the two electrodes which extends outwards from the

electrode surfaces and curves between the two. The base ~~52~~ 50 also incorporates a shield electrode 52 which in this instance is formed from copper foil and wrapped around the outer side of the base ~~52~~50.

Please replace the paragraph on page 23, beginning at line 30 with the following paragraph:

The change in capacitance due to the presence of a hand at different distance ranges from the simulated base was measured. Figure 5 shows the changes in capacitance for an adult hand, held flat at different vertical distance ranges above the base 50 where ~~a~~ the shield 52 was both present and removed which confirm this. There are two technical side effects to the grounded shield 52. The first is that it raises the overall capacitance of the sense electrode structure by a few pF. The second is that it shunts a portion of the electric field away from the sensing region such that capacitance changes at a fixed distance range decline. This is unavoidable for a grounded shield in close proximity to the sense electrodes and is confirmed by the data depicted in Figure 5.